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COVID-19 AND GENDER  
DIFFERENCES IN THE LABOR  
MARKET: EVIDENCE FROM  
THE PERUVIAN ECONOMY

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@ Giannina Vaccaro y Tania Paredes

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Av. Universitaria 1801, Lima 32 – Perú.

Teléfono: (51-1) 626-2000 anexos 4950 - 4951

[econo@pucp.edu.pe](mailto:econo@pucp.edu.pe)

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Encargada de la Serie: Janina V. León Castillo

Departamento de Economía – Pontificia Universidad Católica del Perú

[jaleon@pucp.edu.pe](mailto:jaleon@pucp.edu.pe)

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# COVID-19 and Gender Differences in the Labor Market: Evidence from the Peruvian Economy

Giannina Vaccaro\*

Tania Paredes\*\*

## Abstract

The COVID-19 and its confinement measures have generated a severe economic contraction around the world. However, there is still no consensus on the magnitude of its immediate effects, particularly in developing countries. Analysts have emphasized not only human capital losses but also an economic recession and increase in economic and social inequalities, including gender differences. Despite the Latin America (LA) countries are most affected in terms of deaths, most studies focus on the impact of COVID-19 on developed countries. Using data from the National Household Surveys (ENAHO) from 2019-2021, we studied the impact of the COVID-19'S confinement measures on gender differences in the labor market in Peru, country with one of the biggest death rates. We found that the COVID-19 pandemic and its lockdown measures accentuated gender inequality in labor market. Women have largely decreased the total hours worked than men, particularly due to the reduction of formal employment. More vulnerable women are low-skilled and those who have not worked remotely.

**Keywords:** COVID-19, employment, gender differences, impact analysis, Peru

**JEL Classification:** J01 , J02 , J22 , O17

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\*Corresponding Author. Faculty of Social and Political Sciences, Université de Lausanne (UNIL); e-mail: giannina.vaccaro@unil.ch; ORCID ID: <https://orcid.org/0000-0002-5841-7656>

\*\*Department of Economics, Pontificia Universidad Catolica del Peru (PUCP); e-mail: tania.paredes@pucp.edu.pe; ORCID ID: <https://orcid.org/0000-0003-0190-9753>

# COVID-19 y Diferencias de Género en el Mercado Laboral: Evidencia desde la Economía Peruana

Giannina Vaccaro\*

Tania Paredes\*\*

## Resumen

El COVID-19 y sus medidas de confinamiento han generado una fuerte contracción económica en todo el mundo. Sin embargo, todavía no hay consenso sobre la magnitud de sus efectos inmediatos, particularmente en los países en desarrollo. Los analistas han enfatizado no solo las pérdidas de capital humano, sino también una recesión económica y un aumento de las desigualdades económicas y sociales, incluidas las diferencias de género. A pesar de que los países de América Latina (AL) han sido de los más afectados en términos de muertes, la mayoría de los estudios se centran en el impacto del COVID-19 en países desarrollados. Utilizando datos de la Encuesta Nacional de Hogares (ENAH) de 2019-2021, este documento estudia el impacto de las medidas de confinamiento implementadas durante el COVID-19 en las diferencias de género en el mercado laboral en el Perú, país con una de las tasas de mortalidad más elevadas. Nuestro estudio encuentra que la pandemia del COVID-19 y sus medidas de confinamiento han acentuado la desigualdad de género en el mercado laboral. A diferencia de los hombres, el número de horas de trabajo de las mujeres ha disminuido en gran medida, particularmente debido a la reducción del empleo formal. Este estudio revela que las mujeres más vulnerables son aquellas poco calificadas y con dificultad para implementar el trabajo remoto.

**Palabras Claves:** COVID-19 , empleo , diferencias de género , evaluación de impacto , Perú

**Clasificación JEL:** J01 , J02 , J22 , O17

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\* Autor correspondiente. Faculty of Social and Political Sciences, Université de Lausanne (UNIL); e-mail: giannina.vaccaro@unil.ch; ORCID ID: <https://orcid.org/0000-0002-5841-7656>

\*\* Departamento de Economía, Pontificia Universidad Católica del Perú (PUCP); e-mail: tania.paredes@pucp.edu.pe; ORCID ID: <https://orcid.org/0000-0003-0190-9753>

## 1 Introduction

The COVID-19 pandemic and its confinement measures (school closures, social distancing, remote work, etc.) have exposed the world to negative social and economic consequences. Although the long-term impact of the pandemic is yet to be determined, short-term analysis points out to an increase in gender inequalities ([UN-Women, 2020a](#)).

Compared to men, women could be significantly affected by the pandemic. They work fewer hours, in lower paid occupations, and in jobs with less job stability ([Muller & Casabonne, 2020](#); [UN-Women, 2020a](#)). These disadvantages are driven by institutional patterns, cultural norms and gender roles. Generally women (and girls) are engaged in household care and spend more hours in domestic activities and care responsibilities than men ([Chiuri & Del Boca, 2010](#); [Gutierrez-Domenech, 2005](#); [Tavora & Rubery, 2013](#)). For example, women in Peru before the pandemic spent 52% of their total time on unpaid domestic activities in the home (Time Use National Survey 2010, [INEI \(2010\)](#)). Due to incompatibilities of time schedules and gender roles, usually women experience greater conflict in reconciling work and family life than any other population group during the pandemic ([Hochschild & Machung, 2012](#)). Moreover, in Peru, unlike the average in the region of Latin America and the Caribbean (33.3%), women are mostly represented in informal jobs and in more vulnerable labor market sectors (57.3%) ([Morrison, 2021](#)).

Since the emergence of COVID-19, it has been widely debated whether and how the confinement measures implemented have affected paid and unpaid women's work. The COVID-19 pandemic has represented a major shock that has altered the demand for paid work and the way labor supply is organized: it changed the place of work (remote versus face-to-face), and altered work schedules i.e. work is expected to be delivered at any time of the day. While large sectors of the economy have been closed, the commonly called *essential* sectors (health, education, public transportation, food trade, etc.) during the pandemic increased its demand. These *essential* sectors have been exempted from confinement and have increased demand for paid working hours ([Herzberg-Druker, Kristal, & Yaish, 2020](#); [Hupkau & Petrongolo, 2020](#)). This is particularly relevant for women in Peru. They are more represented in the service (42.0%) and commerce (26.1%) sectors, which require in-presence work and they can, therefore, be more affected by mobility restrictions ([INEI, 2020b](#)).

Also, it is important to consider the substantial increase in unpaid work during the pandemic ([UN-Women, 2020b](#)). Due to the greater increase in remote work, parents must simultaneously work and educate children at home ([Alon et al., 2020b](#); [Guyot & Sawhill, 2020](#)). Furthermore, the workload at home is not homogeneous for all parents, and it depends on children's age. For example, young kids require greater supervision and more intensive care

than older children. At the same time, the confinement and social distancing measures have exacerbated the lack of availability of traditional support networks, such as grandparents, nannies, and maids, who typically provide support in household chores and childcare and, as a consequence, reduce gender gaps in the division of labor (Bayham & Fenichel, 2020; Collins et al., 2021; Raz-Yurovich & Marx, 2019).

This study aims at identifying the impact of the confinement measures during the COVID-19 pandemic on female and male employment in Peru from 2019-2021 (first quaterly). Differently than other related studies (Cambra-Fierro et al., 2022; Castellares & Huarancca, 2021; Cueva, Del Carpio, & Winkler, 2021; Higa, Ospino, & Aragon, 2022; Salas, 2021), we use the National Household Surveys (ENAHO) to investigate not only average effects on employment outcomes during the mandated economic recovery phases implemented during this period in the country, but also to investigate the role of remote and essential work on those outcomes.

## 2 Institutional Context

Questions about whether the confinement COVID-19 measures have exacerbated pre-pandemic gender inequalities and who has been most affected in the labor market remain unanswered. The literature points out that possible reductions and female employment losses could generate significant negative impacts on long-term human capital losses (Becker, 1965; Mincer, 1974). In addition, employment discrimination could have increased.

Recent studies are mainly limited to the analysis of Anglo-Saxon and/or European contexts (Andrew et al., 2020; Bayrakdar & Guveli, 2020; Cullen & Murphy, 2021; Goldin, 2022; Hipp & Bünning, 2021; Niedzwiedz et al., 2021; Reichelt, Makovi, & Sargsyan, 2021). These tend to focus on particular aspects, such as the division of labor in the household (Deshpande, 2020; Farré et al., 2020), the impact of confinement measures on the development of remote work (Adams-Prassl et al., 2020; Beland, Brodeur, & Wright, 2020; Brynjolfsson et al., 2020; Dingel & Neiman, 2020), and the potential substitution of employment hours for caregiving activities (Del Boca et al., 2020; Heggeness, 2020; Sevilla & Smith, 2020). These generally affect disproportionately more to women, and differently in developed countries. Although developed countries have suffered in the aftermath of the pandemic, the most affected regions, such as Latin America (LA), remain understudied.

The lack of knowledge about the impact of COVID-19 in developing countries, particularly in Peru, is problematic because six specific reasons:

First, women in Peru are mostly represented both in the informal sector and in the rural economy. In Peru, 75.8% of women work in the informal sector (INEI, 2020b). Informality often translates into precarious working conditions and lack of social protection. In addition, Peru has an important rural sector, in which women are highly represented (71.8% of total rural employment INEI (2020b)). According to FAO (2020), women in the agricultural sector are the most affected by the impacts of social and economic crises, as they are responsible for household care in rural communities. As a result, and mainly due to the increase in labor competition for lucrative activities in the sector, female employment in the rural sector is marginalized.

Furthermore, the absence of complete household registries, high informal employment and insufficient financial inclusion has limited the effectiveness of mitigation measures implemented by the Peruvian government. In Peru, 52.1% of informal workers perform their work on an ambulatory basis and 24% earn less than the minimum wage (Díaz Cassou, Deza, & Moreno, 2020). Many informal workers must work in public spaces to earn a subsistence wage and are unable to comply with social confinement measures that would mitigate the spread of the virus.

Second, the recent and increasing growth of poverty rates (30.1%) and extreme poverty (5.1%) in Peru (INEI, 2020a), exacerbate the vulnerability of women in the economy and society. During 2004 and 2014, Peru experienced one of the highest poverty reduction rates (about 64%, achieving poverty incidence levels of 36%) in LA (Herrera, 2017). According to Herrera (2017), a good part of the reductions in inequality and poverty levels were associated with improvements in individuals' labor income. However, starting in 2019, with the fall in mineral prices and the unfavorable international context, poverty figures have increased rapidly by 9.9 percentage points. In 2020, with the COVID-2019 crisis, the World Bank (2021) has estimated a negative impact on poverty levels in Peru, mainly explained by a drop of 11.1% in GDP and 20% in employment levels between the months of April and December 2020.

Women and families living in marginalized urban and remote rural areas in conditions of poverty and extreme poverty, with little access to drinking water and sanitation, dirt floors and household overcrowding, face great challenges in complying with social distancing measures. In Peru, women may be the most affected not only due to the increase in care-giving tasks and loss of employment, but also due to the presence of precarious infrastructure conditions in poor households. According to ENAHO (INEI, 2018a), 42.1% of households in Peru do not have a refrigerator, 61.1% do not have internet access, and 9.4% of poor households live in overcrowded conditions.

Third, important gender equality improvements from recent years may be reversed. Along with significant reductions in poverty rates over the last 20 years, Peru has reduced its levels of inequality. Between 2004 and 2014, Peru achieved a significant drop in the average poverty gap of about 17%, from 22.1% to 5.8% (Herrera, 2017). This reduction in inequality levels in the country has been accompanied with reductions in gender gaps in the education sector and in the labor market. Likewise, during 2003 and 2015, Peru significantly reduced the gender gap in basic education. In 2017, despite still differences in the poorest sectors, there were no gender gaps in the average enrollment rate in primary and secondary education (World Bank, 2020).

Moreover, between 2015-2016, the average year-on-year dropout rate in primary and secondary school was lower for females (2.7%) than males (2.9%) (Ministry of Education of Peru, 2016); and the female enrollment rate in higher education (43%) was higher than for their male peers (34%) (INEI, 2016). At the same time, Peru in 2018 was the LA country with the highest female participation ratio, reaching levels of around 67%, mainly explained by the drop in fertility rates (Morrison, 2021). Compared to other LA countries, the gender gap in terms of labor participation in Peru is relatively small (12%) and has remained constant during the last decade (SEDLAC, 2020).

These significant advances could be washed out after the COVID-19 pandemic with the lockdown measures. In addition, there are still significant gender gaps in educational and labor market performance in Peru that could have been widened. Even before COVID-19, by studying the effect of distance learning in higher education, Cacault et al. (2021) showed that the overall impact of online learning deepens educational inequality between more and less able students. In a recent study on the effect of the pandemic, using Mexican data, Morduchowicz and García (2021) predict that lockdown measures will generate significant and heterogeneous losses in the long run in educational and labor market variables. Peru still has a lot to do to achieve gender equity in the education and labor market.

Girls and adolescents in Peru continue to obtaining lower scores in academic achievement tests. According to the School Census Survey (ECE) (Ministry of Education of Peru, 2019), girls obtained on average, in mathematics achievement tests, 560 points versus 573 points obtained by their male peers. According to the World Bank (2021), the main reasons for gender educational differences are related to economic problems and to the burden of household chores. In fact, gender gaps in education are more present in rural than in urban areas of the country. Also, men and women have large differences in the labor market in Peru, not only in terms of employment but also in terms of wages. In addition, gender gaps in the labor market are heterogeneous and vary by population groups. Gender differences in labor participation are found mainly among married people, people of African

descent and people with children. Women in Peru are less represented in better paid jobs and only few occupied higher positions. According to [INEI \(2018b\)](#), using data from the 2015 National Business Survey (ENAHO), in Peru only 28% of company board members are women.

In addition, women in Peru are doubly represented in the group of young people who neither study nor work (*NiNis*), reaching rates of 23.6% for females and 11.9% for males between 15 and 29 years old ([De Hoyos, Rogers, & Székely, 2016](#)). [Scheerens \(2016\)](#) explains this difference due to marked gender roles and time use patterns in Peru. “Women between the ages of 18 and 38 spend on average 37 hours 38 minutes more per week on unpaid activities than their male peers, who spend on average 13 hours and 27 minutes” ([Muller & Paz, 2018](#), p. 48). In addition, the burden of unpaid work increases with age, forcing women to decide between studying, working, or devoting themselves full time to performing household chores. In Peru, the average number of women over 14 years of age without their own income is 29.4 percent, compared to only 11.9 percent for men ([INEI, 2020b](#)).

These decisions impact significantly not only the short-term educational and labor market outcomes, but also affect women’s career progression and the gender wage gap along the life cycle. According to a study recently, [Vaccaro et al. \(2022\)](#) shows that, after controlling for labor participation decisions, the gross wage gap between men and women in Peru in 2018 is around 22% and has increased over the last 10 years. In addition, the authors show that there are significant differences between regions and across the income distribution in the country.

Fourth, lack of health infrastructure and high coverage costs. As of mid-July 2021, Peru was the country with the highest number of COVID-19 fatalities in the world. The COVID-19 pandemic has revealed the vulnerability of the basic health services and the fragility of the Peruvian state in providing social services ([Díaz Cassou et al., 2020](#)). As of 2017, public health spending represented only 15% of GDP ([Datos Macro, 2019](#)). Despite a 13% increase in the sector’s budget in 2021 compared to the last three years, it is still insufficient. The Health Sector Infrastructure and Equipment Gaps indicators show the critical state of the sector in 2021: first level health facilities have 97.1% inadequate installed capacity (precarious infrastructure, obsolete, inoperative or insufficient equipment) versus 51% in 2020 ([ComexPerú, 2021](#)). These figures not only reflect the urgency of an integral intervention in infrastructure, but also the collapse of the sanitary system after the COVID-19 pandemic. The situation is even more critical by lack of efficient execution in public expenditures. According to the (Peruvian) Expenditure Effectiveness Report ([ComexPerú, 2021](#)), from the total budgeted public investment in health, only 68% was executed at the local government level.

The fragile infrastructure in the health sector affects people's health and the working conditions of those who work in the sector. COVID-19 exposes health personnel and their families to unprecedented risks: long work shifts, psychological disorders, occupational burnout and stigma (PAHO, 2021). Women make up 65% of the health sector workforce in Peru and, therefore, are the majority of those affected. Furthermore, despite men (21.7%) have been more affected than women in Peru (17.8%) considering average incidence cases, women have lost their jobs faster (15%) than men and are recovering at a much slower rate (Díaz Cassou et al., 2020).

Fifth, during the COVID-19 and lockdown, Peru faced a period of high social and political instability in the country. During the last year 2020, the country has suffered one of the most unstable political periods in the republican history. Not only has Peru changed president three times in one week (between November 9 and 17, 2020), but we have also experienced one of the most dramatic and polarized presidential elections. The transition period, as well as the electoral period, have been characterized by social mobilizations, social discontent and political and economic uncertainty. This social unrest coupled with economic crisis generate population discontent and increased household stress, which can aggravate employment conditions and exacerbate domestic violence.

While this political and social unrest has been characteristic of this period, our study does not seek to identify the isolated impact of the political crisis on economic stress and employment, but rather, exploiting the specific changes in the periods before and after the onset of confinement (and therefore isolated from the country's political crisis throughout the year). It aims at identifying the relationship between COVID-19 and key labor market indicators.

Finally, pre-existent high rates of domestic violence. Violence against women is one of the most widespread forms of violence in Peru and occurs in all regions, regardless of population's income, education, and age. According to the World Health Organization (WHO), one in three women is likely to suffer physical or sexual violence from a sexual partner in her lifetime. In Peru, 69% of women in rural areas and 51% in urban areas report having suffered physical or sexual violence by a partner in their lifetime (WHO, 2005). According to the 2020 Demographic and Family Health Survey (ENDES) (INEI, 2021), 54.8% of women between 15 and 49 years of age were victims of violence by their husband or partner in the last twelve months. In addition, after COVID-19, there has been a significant increase in the number of telephone records (Line 100) available for cases of violence against women in Peru (Hernández, Dador, & Cassaretto, 2020).

Using Peruvian data, Agüero (2013) shows that domestic violence is negatively correlated with levels of female health and employment. Muller and

Casabonne (2020) estimate a loss of 3.7% in Peruvian GDP, caused by the barriers generated in women who suffer violence, limiting them from making use of their full potential and economic productivity. In addition, reducing violence against women can have inter generational effects. Sviatschi and Trako (2021), using data from courts in Peru, show that reducing violence against women substantially increases the investment in human capital of children in the household (school enrollment, cognitive skills, and reducing child labor). At the same time, Aizer (2010) shows that the reduction in gender wage gaps reduces violence against women in the United States. But in Brazil, Litwin, Perova, and Reynolds (2019) find that the receipt of conditional transfers does not influence the ratio of femicides.

This could be further exacerbated in developing countries such as Peru, with a significant percentage of overcrowded housing (10.9% of poor households, 18.8% of households in extreme poverty (Brown, Ravallion, & Van de Walle, 2020; INEI, 2020b). Porter et al. (2021) is an exception in the recent literature. Using telephone surveys of 18-26 year old's, the authors investigate the increase in physical violence within the home during the period of confinement in Peru, and find that, during the period of confinement between August 18, 2020 and October 15, 2020, this group of young people has experienced an increase in domestic physical violence.

In a nutshell, the high political instability in the country, the fragility of its social and economic systems and the already accentuated gender gaps, place women in a situation of special vulnerability, particularly in the aftermath of the pandemic.

### 3 Theoretical Framework

Only few studies analyze the effect of COVID-19 on inequalities in LA countries. Less is known about the impact of COVID-19 on gender differences in this labor market region. Two papers are the exception. On the one hand, using data from Latin America and the Caribbean (LAC), Cucagna and Romero (2021) show that COVID-19 disproportionately affects women's labor market outcomes. Women are more likely to take on a greater burden of unpaid work in the household, engage in informal work, and be over represented in more affected occupations (retail, catering, etc.). On the other hand, the World Bank (Olivieri, Lara, & Cuesta Leiva, 2021), conducted high frequency telephone surveys at three points in time between May and August 2020 in 13 LAC countries for the COVID-19 High Frequency Monitoring program study in LAC, show that after the start of the quarantine period following COVID-19, women were 44% more likely to lose their jobs than men and to suffer longer unemployment duration.

The reasons why COVID-19 affected disproportionately women in the labor market are attributed to the presence of school-age children in the household and the over representation of women in female-dominated sectors with high degree of social interaction. These make women more vulnerable to social distancing measures. [ECLAC/ILO \(2021\)](#) estimates that the strong economic contraction in the quantity and quality of employment in LAC countries represents a reduction of more than 10 years of progress in female labor participation. Moreover, the aggregate effects might have serious implications in the long term and the effects of COVID-19 on economic sectors are expected to be heterogeneous. The sectors at most risk in LA are those that employ mostly women, such as the informal sector in commerce and tourism. According to [ECLAC/ILO \(2021\)](#), lower-income women in the region face a two-fold obstacle: (1) the lack of economic autonomy, and (2) the gap in internet access for teleworking. Women are not only underrepresented in the telecommunications sectors, but also suffer from a gender bias in the design and use of these communication technologies, which limits innovation and the achievement of gender equality in the region.

Only few studies have analysed the impact of COVID-19 on the Peruvian labor market. [Salas \(2021\)](#) has found that, at the national level, the quarantine measures affected negatively the probability to participate in the labor market and reduce the number of hours worked and monthly income. A similar result is found by [Castellares and Huarancca \(2021\)](#). Moreover, the latter study found that having children between 6 and 12 years accentuates the negative effect of the pandemic on women's participation in the labor market in the national level. These results coincide with other studies that have analyzed the negative impact of the pandemic on women for other countries ([Alon et al., 2020a](#); [Heggeness, 2020](#); [Kalenkoski & Pabilonia, 2020](#); [Qian & Fuller, 2020](#); [Sevilla & Smith, 2020](#)).

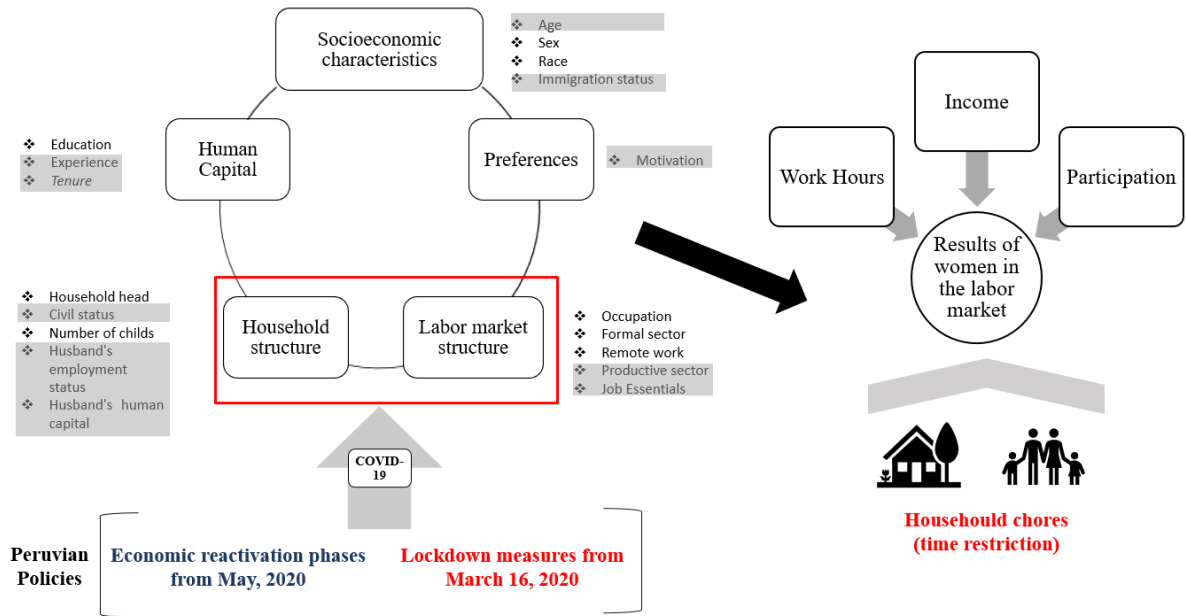
Since the start of the pandemic, multiple studies have been implemented to analyze the impact of COVID-19 on the labor market; however they have not focused on gender analysis ([Cambra-Fierro et al., 2022](#); [Cueva et al., 2021](#); [Higa et al., 2022](#)). Most of these studies have found in common negative effects on employment (worked hours and income), which may become persistent in the medium term ([Higa et al., 2022](#)), affecting mainly sectors such as travel and tourism because immobility restrictions implemented to mitigate COVID-19 infections. Additionally, the effect of COVID-19 seems to be heterogeneous and varies across sectors and countries. [Cueva et al. \(2021\)](#) pointed out the positive role of internet access on employment and the negative effects of the pandemic on informal jobs.

Due to the gap in the literature on the effects of COVID-19 and the gender implications, this paper aims at determining the causal effects of COVID-19's

restriction mobility on gender differences in employment levels, and it investigates the role of remote and essential work for increasing these inequalities.

Figure 1 provides a comprehensive scheme that summarizes the variables' interaction showing their interrelation and how they will affect economic outcomes and gender differences in the labor market. Non-shaded gray variables are used in the quantitative analysis. Despite their relevance for explaining the gender differences in the labor market, shaded gray variables have not been included in the quantitative analysis because lack of information in the data.

Fig. 1: Impact of COVID-19 on Gender Differences (Paredes, 2022)



## 4 Data

### 4.1 Peruvian National Household Survey

This study uses individual level data from the Peruvian National Household Survey (ENAHU, acronym in Spanish) for the period between 2019 to 2021 (first quarterly). ENAHU is a representative annual national and regional survey, conducted by the National Institute of Statistics (INEI). This survey collects detailed individual information on education, employment, income, and expenditures, and it covers both urban and rural areas in all 25 regions. Full description of the variables used in the analysis is detailed in Table 1.

The sample of study is restricted to individuals between 14 and 80 years old and it excludes those who are unemployed, retired, and self-employed. These

groups are excluded from the sample because we are specifically interested in analyzing how the COVID-19 quarantine has affected those who remain in the labor market and whose employment status does not depend of themselves. The total pooled sample consists of 34,860 observations between 2019 and 2021 (first quarterly). Table 2 displays summary statistics at the initial and last study period of our analysis.

**Table 1: Variables Description**

Variables	Description
Hours worked per week	Hours worked per week by person $i$ in period $t$ in department $j$
Treatment	Represents whether the person works actual or usual hours
Female	Dummy that takes the value of 1 if the person is female, 0 otherwise
COVID19	Dummy that takes the value of 1 if the month corresponds to the mobility restriction period, 0 otherwise
Household head	Dummy that takes the value of 1 if the person refers in the survey as the household head, 0 otherwise
Race	Dummy that takes the value of 1 if the person have a white race, 0 otherwise
Children under 6	Dummy that takes the value of 1 if the household have children under 6 years, 0 otherwise
Formal	Dummy that takes the value of 1 if the person is a formal worker, 0 otherwise
Years of schooling	Number of years of education
Remote work	Dummy that takes the value of 1 if the job of a person can be done remote, 0 otherwise
Phase 1	Dummy that takes the value of 1 if period of time corresponds to the phase 1 (extended) of economic recovery, 0 otherwise
Phase 2	Dummy that takes the value of 1 if period of time corresponds to the phase 2 of economic recovery, 0 otherwise
Phase 3	Dummy that takes the value of 1 if period of time corresponds to the phase 3 of economic recovery, 0 otherwise
Phase 4	Dummy that takes the value of 1 if period of time corresponds to the phase 4 of economic recovery, 0 otherwise
Phase 4 (extended)	Dummy that takes the value of 1 if period of time corresponds to the phase 4 (extended) of economic recovery, 0 otherwise
<b>Categorical variables</b>	
Occupation	40 categories. We employ the International Standard Classification of Occupations-ISCO (2008) provided by the International Labour Organization (ILO).
Region	25 categories
Month-Year	27 categories

Note: Hours worked per week could represent two alternatives: i) actual worked hours and ii) usual worked hours. The difference between both alternatives depends on what is reported by the unit of analysis (individuals). Treatment represent the probability of a person work actual hours or usual hours as in Koebel and Pohler (2020). Workers are defined as informal if they are not covered by the social security system of ESSALUD.

**Table 2: Descriptive Statistics**

Variables	Mean	SD	Min	Max
Hours work per week	30.52	20	0	98
Treatment	0.5	0.5	0	1
COVID19	0.56	0.5	0	1
Female	0.4	0.49	0	1
Household head	0.53	0.50	0	1
Race	0.03	0.18	0	1
Children under 6	0.35	0.48	0	1
Formal	0.31	0.46	0	1
Years of schooling	10.12	4.76	0	18
Remote work	0.13	0.34	0	1
Phase 1	0.07	0.25	0	1
Phase 2	0.06	0.23	0	1
Phase 3	0.14	0.35	0	1
Phase 4	0.03	0.16	0	1
Phase 4 (extended)	0.12	0.33	0	1

## 4.2 Occupational Information Network (O\*NET)

We follow [Borjas and Cassidy \(2020\)](#), based on the first Principal Components Analysis (PCA), and use the Occupational Information Network (O\*NET) to construct the remote work variable for the Peruvian case. Full description of the surveyed variables involved is detailed in [Table 3](#).

**Table 3: Variables used for remote job construction**

Survey	Variables	Specification
Work context	Telephone use frequency	Frequency level 1 to 5
	Frequency of email use	Frequency level 1 to 5
Work activities	Data analysis	Importance from 1 to 5
	Interaction with computers	Importance from 1 to 5

## 4.3 Economic Recovery Phases

This study uses information of the economic recovery phases implemented by the Peruvian Central Government in the context of the pandemic of COVID-19. Full description of the 4 phases and its extensions used in the analysis is detailed in [Table 4](#).

We have exploited ENAHO's individual information of date (month and year) of the survey collection and dates of the introduction of the economic recovery phases that opened activities of specific economic sectors to allow for

differentiated impact of COVID-19 across time. Despite phase 2 (extension) has been clearly defined in the supreme decrees and government regulations, it has not been possible to use it because ENAHO does not provide granular information of survey collection day. So, it has not been possible to differentiate between phase 2 and phase 2 (extension) during the month of June.

The descriptive statistic of the variable that has been constructed it is shows in Table 2.

**Table 4: Phases of Economic Recovery - Peru**

Phases	Number of subsectors (4 digits)	Decree	Date
Essential sectors		DS N 044-2020-PCM	15.03.2020
Phase 1	201 subsectors	DS N 080-2020-PCM	4.05.2020
Phase 2	additionally 67	DS N 101-2020-PCM	4.06.2020
Phase 2 (extended)	additionally 30	DS N 110-2020-PCM	18.06.2020
Phase 3	additionally 25	DS N 117-2020-PCM	30.06.2020
Phase 4	additionally 74	DS N 157-2020-PCM	26.09.2020
Phase 4 (extended)	additionally 7	DS N 187-2020-PCM	6.12.2020

Sectors included in each phase of economic recovery are specified below:

- Phase 1: Mining, Construction, Services and tourism, and Commerce
- Phase 2: Agriculture, Construction, Commerce and Services, Manufacturing and Mining.
- Phase 2 (extended): Commerce and Services, and Manufacturing.
- Phase 3: Agriculture, Construction, Commerce and Services, Manufacturing and Mining.
- Phase 4: Commerce and Services
- Phase 4 (extended): Commerce and Services

## 5 Methodology

To determine how the mobility restrictions caused by COVID-19 in Peru have differently affected hours worked of men and women, we follow [Koebel and Pohler \(2020\)](#). These authors use the Diff-and-Diff method to compare changes in *actual hours worked* versus changes in *hours usually worked* to investigate the impact of the COVID-19 quarantine on employment in Canada.

Unlike other identification strategies, the [Koebel and Pohler](#)'s method allows to identify the causal effect of a policy by exploiting the differences between the treated and control groups exposed to a particular policy i.e. the COVID-19 quarantine. The main idea of this identification method seeks to identify the causal effect of COVID-19 by comparing changes between (a) *hours actually worked* before and after the start of the pandemic (on the main job), and (b) *hours usually worked* (on the main job) before and after the beginning of the quarantine.

Thus, we aim to identify the magnitude of the policy on employment outcomes by isolating the effect of confinement measures that differentiates between treated and control workers. To implement this method, we first check that the basic assumptions are fulfilled: (1) the change in *hours actually worked* would have been the same in *hours usually worked* if there had been no quarantine and (2) the assumption of parallel trends for all analysis groups. Our study contributes to the literature by using an identification strategy not yet implemented neither in a developing country nor with Peruvian data.

Comparing the *hours actually worked* and the *hours usually worked* of individuals in the sample allows to obtain information at two different points of time: i) before taking the survey and ii) at the time of the survey collection. assuming the aforementioned assumptions that guarantee, using this type of quasi-experimental method of Diff-and-Diff allows capturing the change in *hours actually worked* because of COVID-19.

Moreover, to better understand the impact of COVID-19 over women's and men's employment in Peru, we extend [Koebel and Pohler](#)'s analysis by looking at not only average effects for the average population, but also by estimating the effects for population groups with different level of education (primary, secondary and higher) and along the wage distribution (across the income quantiles).

The form of the regressions is given by equation 1:

$$Y_{itj} = \alpha_{itj} + \delta T_i * COVID19_t * Female_i + \beta_1 T_i + \beta_2 COVID19_t + \beta_3 Female_i + \beta'_4 X_{1i} + \beta'_5 X_{2i} + \gamma_j + \tau_t + \epsilon_{it} \quad (1)$$

Where  $Y_{itj}$  is the dependent variable *hours worked per week* for each person  $i$  in period  $t$  in department  $j$ ;  $T_i$  indicates if the person works the *actual* or *usual* hours and it is measured by a dummy variable;  $Female_i$  represents if person  $i$  is a woman;  $COVID19_t$  it is measured as dummy variable that takes the value of 1 if the month corresponds to the mobility restriction period, 0 otherwise and it represents the phase (measured by month) of health emergency in time  $t$ ;  $X_{1i}$  is a vector of observable characteristics related to socioeconomic status of the person such as characteristics

related to family and human capital measured by race, head of household, presence of children under 6 in the household and years of schooling;  $X_{2i}$  is a vector control variables which includes a very desegregate set of occupational dummies up of ISCO occupational codes with 2-digit disaggregation; and  $T_i * COVID_t * Female_i$  is an interaction term that indicates whether a female worker belongs to the treated or control group in the COVID period. The model includes a set of categorical variables of the reactivation phases in Peru during 2020. Additionally, the model includes regional fixed effects (25 departmental dummy variables) ( $\gamma_j$ ), time fixed effects ( $\tau$ ) measured with 40 monthly-year dummies. Each of this dummy variable represent date of the information that is include in the sample since January 2019 to March 2021. and a error component ( $\epsilon_{itj}$ ).

Unlike the [Koebel and Pohler](#)'s study, our analysis proposes to identify not only the simultaneous effect of COVID-19 and the treatment variable (T), that indicates if the person works *the actual* or *usual hours*, but additionally it aims to capture the effect of the mobility restrictions due to COVID-19 on hours worked for female workers ( $\delta$ ). The proposed estimation goes beyond the based-line [Koebel and Pohler](#) model; allowing us to identify the gender-differentiated effect that COVID-19 quarantine had on hours worked of the Peruvian labor force.

## 6 Results

We present here three main results that aim at identifying the gender differentiated impact of the COVID-19 pandemic on the Peruvian labor market. First, we evaluated the averaged impact of COVID-19 for the total sample, as well as for formal and informal workers (see [Table 5](#)). Second, we investigated how sensitive are the former across the economic recovery phases ([Table 6](#)). Third, we evaluate the heterogeneity of our results across education and income population groups ([Table 7](#) and [Table 8](#)).

First, we begin our discussion with the average impact of COVID-19 presented in [Table 5](#). Column (1) shows the average aggregated effects for the total sample of analysis (34,860 obs), and columns (2) and (3) show differentiated effects for workers in formal (10,888 obs) and informal (23,972 obs) employment respectively. Differently from what has been done to analyse the impact of COVID-19 in Peru ([Castellares & Huarancca, 2021](#); [Salas, 2021](#)), our treatment variable  $T$  takes the value of 1 when the person reports the *actually hours worked* (during COVID period) and 0 when the person reports the *hours usually worked* (pre-COVID-19 period). This variable aims to capture the causal effect of the COVID restriction in hours worked per week.

Results show that, on average, women worked less hours than men (-2.974) in the labor market, regardless of being exposed to confinement measures.

This negative effect is also found in formal (-3.701) and informal (-2.752) employment. Indeed, after the lockdown started (captured by *COVID19*), women decreased significantly (-4.238) their hours they actually worked compared to usual working hours before the lockdown. This reduction was mainly explained because the decrease in hours worked in formal employment (-7.029), regardless of having small children (less than 6 years old) or working remotely. Unlike women, men seem to have increased their hours actually worked per week (in about 5.335 hours), mainly because their increase in informal work (6.063).

This result is consistent with Salas (2021). Similarly to our study, she found that women decreased more than men their hours worked, mainly because the decrease in formal employment. Also, our results are line with what is found in other countries. However, the magnitude of our effects are bigger than for developed economies. Koebel and Pohler (2020), for example, found that in Canada, workers decreased 3.8 hours per week. Differently than for developed countries (Alon et al., 2020a; Morduchowicz & García, 2021), we do not find that, on average, remote work in Peru mitigates the negative effects of the pandemic in formal sectors.

Second, Table 6 reports the standard results of the Diff-and-Diff estimates similarly to Table 5, yet now distinguishing the effects across the economic recovery phases (defined in Table 4) that the Peruvian government implemented between March 16th and end of December of 2020. Results are pretty similar to what was found before, yet recovery phase dummies capture a larger decrease on hours worked in specific periods of time due to, for example, the opening of the Essential Sector only (Phase 1); or a positive impact on hours work because the opening of the services and Tourism (Phase 4-extended). Differentiated (but not significant) effects captured by the interaction of the key variables and recovery phases dummies are displayed in Table 9 in Annex.

Third, Table 7 shows that COVID-19 has decreased women' hours worked regardless of their level of education. However, the effect are heterogeneous. On average, women with secondary education suffer the most. Column (1) of Table 7 shows aggregated effects for the total sample of analysis, columns (2) and (3) differentiated effects for workers in formal and informal employment respectively, column (4) and (5) shows the effects for workers in formal sector with remote and non-remote employ modality respectively, and finally, column (6) and (7) shows the effects for workers in informal sector with remote and non-remote employ modality respectively.

**Table 5: Impact of COVID-19 over worked hours 2019-2021**

Variables	(1) Total	(2) Formal	(3) Informal
female	-2.974*** (0.374)	-3.701*** (0.673)	-2.752*** (0.454)
COVID19	-2.697*** (0.768)	-0.774 (1.382)	-4.277*** (0.928)
T	19.107*** (0.276)	25.203*** (0.498)	16.386*** (0.324)
COVID19*female	3.277*** (0.544)	5.730*** (1.060)	2.129*** (0.631)
COVID19* T	5.335*** (0.396)	4.318*** (0.777)	6.063*** (0.450)
COVID19*female*T	-4.238*** (0.466)	-7.029*** (0.877)	-3.577*** (0.541)
COVID19**female*child	0.289 (0.606)	0.390 (1.075)	0.728 (0.733)
COVID19**female*remotability	1.587 (1.182)	-0.666 (1.569)	3.124* (1.879)
Constant	20.983*** (3.086)	19.353*** (4.569)	17.205*** (3.528)
Occupational Dummies	YES	YES	YES
Regional dummies	YES	YES	YES
Time dummies	YES	YES	YES
Observations	34,860	10,888	23,972
R-squared	0.334	0.406	0.319

Note: The estimate was made using the difference-in-differences method and includes control variables such as Household head, Race, Children under 6, Years of schooling and remote work. Additionally, the estimation included the categorical variables as fixed effect like Occupation, region and month-year information. Finally, the phases of economy recovery that have been used are determined about the month and the year when the questionnaire has been taken. The pooled standard errors at the individual level are in parentheses and the level of significance corresponds to the following classification: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$  (\*) T is defined as  $P(\text{worked real hours vs. usual hours})$ , following Koebel & Pohler (2020).

**Table 6: Impact of COVID-19 over worked hours (with phases of economic opening) 2019-2021**

Variables	(1) Total	(2) Formal	(3) Informal
female	-2.974*** (0.374)	-3.701*** (0.673)	-2.752*** (0.454)
COVID19	-3.290*** (0.728)	1.753 (1.421)	-5.778*** (0.845)
T	19.107*** (0.276)	25.203*** (0.498)	16.386*** (0.324)
COVID19*female	3.277*** (0.544)	5.730*** (1.060)	2.129*** (0.631)
COVID19* T	5.335*** (0.396)	4.318*** (0.777)	6.063*** (0.450)
COVID19*female*T	-4.238*** (0.466)	-7.029*** (0.877)	-3.577*** (0.541)
COVID19*female*child*	0.289 (0.606)	0.390 (1.075)	0.728 (0.733)
COVID*female*remotability	1.587 (1.182)	-0.666 (1.569)	3.124* (1.879)
Phase 1 (05/2020)	-1.188* (0.611)	-4.320*** (1.242)	-0.102 (0.682)
Phase 2 (06/2020)	0.150 (0.624)	-3.166** (1.304)	1.415** (0.690)
Phase 3 (07/2020-09/2020)	0.626 (0.689)	-0.652 (1.502)	1.294* (0.752)
Phase 4 (10/2020-11/2020)	1.688** (0.762)	1.781 (1.626)	1.302 (0.828)
Phase 4 (extended) (12/2020)	0.592 (0.783)	-2.527* (1.478)	1.501* (0.912)
Constant	20.983*** (3.086)	19.353*** (4.569)	17.205*** (3.528)
Occupational Dummies	YES	YES	YES
Regional dummies	YES	YES	YES
Time dummies	YES	YES	YES
Observations	34,860	10,888	23,972
R-squared	0.334	0.406	0.319

Note: The estimate was made using the difference-in-differences method and includes control variables such as Household head, Race, Children under 6, Years of schooling and remote work. Additionally, the estimation included the categorical variables as fixed effect like Occupation, region and month-year information. Finally, the phases of economy recovery that have been used are determined about the month and the year when the questionnaire has been taken. The pooled standard errors at the individual level are in parentheses and the level of significance corresponds to the following classification: \*  $p < 0.1$ , \*\*  $p < 0.5$ , \*\*\*  $p < 0.01$  (\*) T is defined as  $P(\text{worked real hours vs. usual hours})$ , following Koebel & Pohler (2020).

Results show that, on average working women in the COVID period decreased their *actually hours worked* per week compared to their *usually*

*hours worked*. Women with secondary education largely reduced their actual worker hours (-4.603), compared to women with higher education (-4.072) or primary schooling (-3.508). Among workers in formal employment, women with lower education were the most disadvantaged. They reduced almost double (-10.932) their actual worked hours than women with tertiary education (-5.357). Women with secondary education reduced the most their actual working hours the informal sector (-4.123).

In addition, column (4) and (5) show that women with the lowest level of education (primary school) working in formal employment and remotely suffer the most comparing to women with higher level of education. Women with tertiary level of education working remotely did not seem to have been affected by the pandemic. However, women with tertiary level of education but not working remotely were affected (-7.920). Columns (6) and (7) show that women working in informal jobs not working remotely were also affected but in a lesser way than those in formal employment.

These results are consistent with the idea that low-skilled workers with no remote work are most affected by negative economic shocks. They largely reduced their *actually hours worked* compared to their *usually hours worked*, relative to their peers with higher education and remote employment (Alon et al., 2020a, 2020b; Borjas & Cassidy, 2020; Qian & Fuller, 2020). In terms of magnitude our results aligned with other findings with Peruvian data. Salas (2021) found that COVID decrease in 6,283 the female's hours worked of women with secondary education (significantly, unlike those with primary and higher education). Our study complements the previous analysis, by providing a new alternative methods that complements previous work on this issue by studying the differences of the effect not only by gender, but also by factors such as education (Koebel and Pohler (2020)).

It is worth mentioning our results differ from those found by Higa et al. (2022), who study the effect of COVID-19 on informality. They found that in the early months of the pandemic, less-educated and informal workers reduced their labor income 80% more than higher educated and formal workers. The reason because that happened is because informal employments depends on the availability of public space to work, which was restricted during the mobility restrictions in the country. Additionally, our results are consistent when studying the effect of COVID-19 on employment of workers with different education levels. Our results highlight that the least qualified workers and those with fewer opportunities to work remotely are the most affected by the pandemic in terms of employment.

Fourth, in order to identify how heterogeneous are the effects of COVID-19 on employment across income quantiles, Table 8 reports the effects across five income quantiles for three main variables: the Diff-and-Diff measured

by  $COVID19*female*T$ , the effect of COVID for women with small children measured by  $COVID*female*child$ , and the effect of COVID for women who are likely to work remotely. Column (1) shows the average aggregated effects for the total sample of analysis, columns (2) and (3) differentiated effects for workers in formal and informal employment respectively, column (4) and (5) shows the impact of COVID-19 for workers in formal sector with remote and non-remote employ modality respectively, and finally, column (6) and (7) differentiated effects for workers in informal sector with remote and non-remote employ modality respectively.

Results show that, on average, all working women in the COVID period have decreased their *actually worked hours* per week compared to their *usually worked hours*. Women in the top of the income distribution have suffered the most, reducing their actual working hours in (-9.180) hours per week. Women in the middle of the distribution (quantile 3) seem to have also decreased their working hours but results are not statically significant. Across the income distribution, most women (from 2nd to 5th quantile) reduced their formal employment. However, women in the second quantile reduced the most their number of actual hours worked (-14.422), followed by women in the highest quantile (-10.162).

In general, results seem not to be different in presence of motherhood of small children of by the possibility of remote work. However, we show that mothers with children under 6 years old have experienced the highest reduction in their hours worked are those with no remote formal employment and located in the bottom of the income distribution (quintile 1). These results are in line with the findings of [Castellares and Huarancca \(2021\)](#) who also found a decrease in the probability of having a job for women with children under 6 years old or school-age children, unlike their male peers.

Table 7: Impact of COVID-19 on hours worked - Educational level 2019-2021

	Variables	Total (1)	Formal		Informal		Formal		Informal	
			(2)	(3)	(4)	(5)	(6)	(7)		
Primary Education	COVID19*female*T	-3.508*** (0.831)	-10.932*** (3.928)	-3.060*** (0.837)	-13.266** (5.309)	-11.986*** (3.815)	0.774 (5.801)	-3.623*** (0.827)		
	Observations	8,238	586	7,652	50	536	270	7,382		
	R-squared	0.384	0.477	0.391	0.904	0.497	0.473	0.397		
Secondary Education	COVID19*female*T	-4.603*** (0.802)	-7.511*** (1.851)	-4.123*** (0.879)	-5.179 (4.973)	-7.923*** (1.958)	-2.553 (4.597)	-4.556*** (0.886)		
	Observations	13,264	2,652	10,612	284	2,368	630	9,982		
	R-squared	0.328	0.445	0.314	0.604	0.445	0.291	0.323		
Tertiary Education	COVID19*female*T	-4.072*** (0.830)	-5.357*** (1.027)	-2.738* (1.425)	0.629 (1.772)	-7.920*** (1.255)	0.658 (3.198)	-3.706** (1.562)		
	Observations	12,268	7,602	4,666	2,230	5,372	1,034	3,632		
	R-squared	0.339	0.414	0.284	0.411	0.426	0.286	0.309		
	Occupational Dummies	YES	YES	YES	YES	YES	YES	YES		
	Regional dummies	YES	YES	YES	YES	YES	YES	YES		
	Time dummies	YES	YES	YES	YES	YES	YES	YES		

Note: The estimate was made using the difference-in-differences method and includes control variables such as Household head, Race, Children under 6, Years of schooling and remote work. Additionally, the estimation included the categorical variables as fixed effect like Occupation, region and month-year information. Finally, the phases of economy recovery that have been used are determined about the month and the year when the questionnaire has been taken. The pooled standard errors at the individual level are in parentheses and the level of significance corresponds to the following classification: \* p<0.1, \*\* p<0.5, \*\*\* p<0.01 (\*) T is defined as P(worked real hours vs. usual hours), following Koebel & Pohler (2020).

Table 8: Impact of COVID-19 on Hours Worked - Income Quintile 2019-2021

	Variables	Total (1)	Formal		Informal		Formal		Informal	
			(2)	(3)	(4)	(5)	(6)	(7)		
Quintile 1	COVID19*female*T	-2.305*** (0.784)	-2.076 (1.724)	-1.765** (0.841)	2.879 (3.892)	-3.243* (1.863)	3.304 (4.288)	-2.131** (0.850)		
	COVID*female*child	1.755* (1.024)	-12.726 (7.744)	1.690 (1.046)	-	-15.978* (8.382)	-13.227** (6.354)	2.271** (1.046)		
	COVID*female*remotability	6.559* (3.873)	-5.900 (9.869)	11.347** (4.592)	-	-	-	-		
Quintile 2	COVID19*female*T	-6.152*** (0.941)	-14.422*** (3.088)	-15.242*** (3.140)	-10.166 (9.977)	-5.685*** (0.986)	-0.722 (4.510)	-6.330*** (0.995)		
	COVID*female*child	-0.269 (1.242)	2.701 (3.945)	-0.0768 (4.390)	-	-0.669 (1.314)	-0.139 (5.811)	-0.974 (1.343)		
	COVID*female*remotability	-8.534** (3.693)	-12.754 (13.281)	-	-	-	-	-		
Quintile 3	COVID19*female*T	-1.487 (1.075)	-5.741* (3.005)	-1.606 (1.161)	-9.979 (7.405)	-4.192 (2.937)	-1.995 (4.476)	-1.872 (1.168)		
	COVID*female*child	0.615 (1.522)	-0.136 (4.445)	0.608 (1.664)	-53.924* (27.453)	5.217 (4.364)	7.254 (6.671)	0.728 (1.679)		
	COVID*female*remotability	2.965 (3.399)	3.001 (8.449)	1.199 (3.871)	-	-	-	-		
Quintile 4	COVID19*female*T	-2.829** (1.207)	-6.392*** (1.573)	-1.418 (1.953)	-0.943 (2.794)	-8.284*** (1.895)	3.381 (5.589)	-2.278 (2.066)		
	COVID*female*child	-0.313 (1.525)	2.412 (2.009)	-3.505 (2.444)	5.647 (4.275)	1.485 (2.368)	-6.345 (7.949)	-3.158 (2.615)		
	COVID*female*remotability	1.960 (2.334)	0.757 (2.985)	3.798 (4.050)	-	-	-	-		
Quintile 5	COVID19*female*T	-9.180*** (1.367)	-10.162*** (1.444)	-1.251 (4.695)	-1.098 (2.554)	-13.230*** (1.743)	-5.655 (7.874)	0.986 (5.768)		
	COVID*female*child	1.928 (1.629)	1.001 (1.616)	6.092 (5.642)	4.035 (3.648)	0.644 (1.794)	-4.692 (11.47)	8.974 (7.111)		
	COVID*female*remotability	-1.315 (2.077)	-1.630 (2.176)	3.619 (6.345)	-	-	-	-		

Note: The estimate was made using the difference-in-differences method and includes control variables such as Household head, Race, Children under 6, Years of schooling and remote work. Additionally, the estimation included the categorical variables as fixed effect like Occupation, region and month-year information. Finally, the phases of economy recovery that have been used are determined about the month and the year when the questionnaire has been taken. The pooled standard errors at the individual level are in parentheses and the level of significance corresponds to the following classification: \* p<0.1, \*\* p<0.5, \*\*\* p<0.01 (\*) T is defined as P(worked real hours vs. usual hours), following Koebel & Pohler (2020).

## 7 Conclusions

This study contributes to the literature in three fundamental ways. First, by using a Diff-and-Diff methodology as in [Koebel and Pohler \(2020\)](#), we establish an empirical technique that allows to identify the casual effect of the quarantine of COVID-19 on gender differences in hours worked in the Peruvian market. Second, by including measuring the impact of remote work, we determine the differentiated impact of the quarantine on workers with the possibility to continue their working activities remotely versus those who could not do the same. Finally, by considering the phases of economic reactivation during 2020 during the lockdown, we allowed for the differentiated impact of COVID-19 across time.

The main findings of this study shows first, that in Peru women also largely reduced their worked hours per week after the start of COVID-19 than men. This result, also found in the national and international literature, could be explained by the different obstacles that women present in the Peruvian labor market and abroad. Second, the worst period has been during the phase 1 of the lockdown (where only Mining, Construction, Services and tourism, and Commerce were allowed to operate) and a slight recovery period during phase 4 (Services and tourism). Third, we found that formal employment is reduced to a greater extent than informal employment, mainly because the loss of employment of low-skilled workers with no possibility for remote work. This coincides with literature that analyses the segmentation of the impact of COVID-19 by level of education and remote work. Fourth, we show evidence that women who reduce the most their hours worked are those located in the highest economic strata (quintile 5) and have a formal- and non-remote job. Finally, we show that mainly mothers with children under 6 years with remote formal employment and located in the middle of the income distribution (quintile 3) were the most affected by COVID-19 and its lockdown measures.

In a nutshell, these results highlight that the women located in the highest economic strata (quintile 5) and have a formal and no-remote job have reduced the most their actual hours worked. Our results contribute to the literature and complement the findings of [Koebel and Pohler \(2020\)](#). It shows the differentiated gendered impact of COVID-19 across the income distribution, and it explains how these results may vary by type and modality of employment and the implications of motherhood in the Peruvian case.

## References

Adams-Prassl, A., et al. (2020). Inequality in the impact of the coronavirus shock: Evidence from real time surveys. *Journal of Public Economics*, 189, 104245.

doi:<https://doi.org/10.1016/j.jpubeco.2020.104245>

Agüero, J. (2013). *Causal estimates of the intangible costs of violence against women in Latin America and the Caribbean* (Working paper No. IDB-WP-414). Washington, DC: IDB.

Aizer, A. (2010). The gender wage gap and domestic violence. *American Economic Review*, 100(4), 1847–59.

doi:<https://doi.org/10.1257/aer.100.4.1847>

Alon, T., et al. (2020a). *The impact of COVID-19 on gender equality* (Working paper No. 26947). Cambridge, MA: National Bureau of Economic Research.

Alon, T., et al. (2020b). *This time it's different: The role of women's employment in a pandemic recession* (Working paper No. 27660). Cambridge, MA: National Bureau of Economic Research.

Andrew, A., Cattan, S., Costa Dias, M., Farquharson, C., Kraftman, L., Krutikova, S., . . . Sevilla, A. (2020). *The gendered division of paid and domestic work under lockdown* (Discussion paper No. 13500). Bonn: Institute of Labor Economics (IZA).

Bayham, J., & Fenichel, E.P. (2020). Impact of school closures for COVID-19 on the US health-care workforce and net mortality: a modelling study. *The Lancet Public Health*, 5(5), e271–e278.

doi:[https://doi.org/10.1016/S2468-2667\(20\)30082-7](https://doi.org/10.1016/S2468-2667(20)30082-7)

Bayrakdar, S., & Guveli, A. (2020). *Inequalities in home learning and schools' provision of distance teaching during school closure of COVID-19 lockdown in the UK* (Working Paper No. 2020-09). Colchester: University of Essex, Institute for Social and Economic Research (ISER).

Becker, G.S. (1965). A theory of the allocation of time. *The economic journal*, 75(299), 493–517.

doi:<https://doi.org/10.2307/2228949>

- Beland, L.-P., Brodeur, A., Wright, T. (2020). *The short-term economic consequences of Covid-19: exposure to disease, remote work and government response* (Discussion paper No. 13159). Bonn: Institute of Labor Economics (IZA).
- Borjas, G.J., & Cassidy, H. (2020). *The adverse effect of the COVID-19 labor market shock on immigrant employment* (Working paper No. 27243). Cambridge, MA: National Bureau of Economic Research.
- Brown, C.S., Ravallion, M., Van de Walle, D. (2020). *Can the world's poor protect themselves from the new coronavirus?* (Working paper No. 27200). Cambridge, MA: National Bureau of Economic Research.
- Brynjolfsson, E., et al. (2020). *COVID-19 and remote work: An early look at US data* (Working paper No. 27344). Cambridge, MA: National Bureau of Economic Research.
- Cacault, M., et al. (2021). Distance learning in higher education: evidence from a randomized experiment. *Journal of the European Economic Association*, 19(4), 2322–2372.  
doi:<https://doi.org/10.1093/jeea/jvaa060>
- Cambra-Fierro, J., et al. (2022). Destination recovery during covid-19 in an emerging economy: Insights from Perú. *European Research on Management and Business Economics*, 28(3), 100188.
- Castellares, R., & Huarancca, M. (2021). El mercado laboral en tiempos de pandemia. *Revista Moneda*(187), 43–49.
- Chiuri, M.C., & Del Boca, D. (2010). Home-leaving decisions of daughters and sons. *Review of Economics of the Household*, 8(3), 393–408.  
doi:<https://doi.org/10.1007/s11150-010-9093-2>
- Collins, C., et al. (2021). Covid-19 and the gender gap in work hours. *Gender, Work & Organization*, 28, 101–112.  
doi:<https://doi.org/10.1111/gwao.12506>
- ComexPerú (2021). *Reporte de Eficacia del Gasto: Resultados 2020* (Tech. Rep.). Sociedad de Comercio Exterior del Perú. Retrieved from <https://www.comexperu.org.pe/upload/articles/reportes/reporteficacia-002.pdf>

Cucagna, E., & Romero, J. (2021). *The gendered impacts of COVID-19 on Labor Markets in Latin America and the Caribbean* (Tech. Rep.). Washington, DC: World Bank.

Cueva, R., Del Carpio, X., Winkler, H. (2021). The Impacts of COVID-19 on Informal Labor Markets. *World Bank*.

Cullen, P., & Murphy, M.P. (2021). Responses to the covid-19 crisis in ireland: From feminized to feminist. *Gender, Work & Organization*, 28, 348–365.

doi:<https://doi.org/10.1111/gwao.12596>

Datos Macro (2019). *Estadísticas macroeconómicas*. Retrieved from <https://datosmacro.expansion.com/>

De Hoyos, R., Rogers, H., Székely, M. (2016). *Out of school and out of work: Risk and opportunities for latin america's Ninis*. Washington, DC: World Bank.

Del Boca, D., et al. (2020). Women's and men's work, housework and childcare, before and during COVID-19. *Review of Economics of the Household*, 18(4), 1001–1017.

doi:<https://doi.org/10.1007/s11150-020-09502-1>

Deshpande, A. (2020). *The Covid-19 pandemic and lockdown: First order effects on gender gaps in employment and domestic time use in India* (Discussion paper No. 607). Essen: Global Labor Organization (GLO).

Díaz Cassou, J., Deza, M., Moreno, K. (2020). *Perú: Desafíos del desarrollo en el post COVID-19* (Discussion paper No. 00790). Washington, DC: IDB.

Dingel, J.I., & Neiman, B. (2020). How many jobs can be done at home? *Journal of Public Economics*, 189, 104235.

doi:<https://doi.org/10.1016/j.jpubeco.2020.104235>

ECLAC/ILO (2021). *Employment Situation in Latin America and the Caribbean: Decent work for platform workers in Latin America* (Bulletin No. 24). Santiago: United Nations.

FAO (2020). *Efectos de la COVID-19 en hombres y en mujeres y respuestas políticas equitativas en el ámbito de la agricultura, la seguridad alimentaria y la nutrición* (Tech. Rep. No. ISBN 978-92-5-132835-4). Rome. doi:<https://doi.org/https://doi.org/10.4060/ca9198es>

Farré, L., et al. (2020). *How the Covid-19 lockdown affected gender inequality in paid and unpaid work in Spain* (Discussion Paper No. 13434). Bonn: Institute of Labor Economics (IZA).

Goldin, C. (2022). *Understanding the Economic Impact of COVID-19 on Women*. BPEA Conference Drafts, March 24-25, 2022.

Gutierrez-Domenech, M. (2005). Employment after motherhood: a European comparison. *Labour Economics*, 12(1), 99–123.

doi:<https://doi.org/10.1016/j.labeco.2004.04.004>

Guyot, K., & Sawhill, I.V. (2020). Telecommuting will likely continue long after the pandemic. *The Brookings Institution*.

Heggeness, M.L. (2020). Estimating the immediate impact of the covid-19 shock on parental attachment to the labor market and the double bind of mothers. *Review of Economics of the Household*, 18(4), 1053–1078.

doi:<https://doi.org/10.1007/s11150-020-09514-x>

Hernández, W., Dador, J., Cassaretto, M. (2020). "Aló, tengo un problema": *Evaluación de impacto de la línea 100 del Ministerio de la Mujer y Poblaciones Vulnerables*. GRADE, CIES y MIMP. Lima, Perú.

Herrera, J. (2017). Poverty and economic inequalities in peru during the boom in growth: 2004–14. *Carbonnier, G., HC y. STV, editor, Alternative Pathways to Sustainable Development: Lessons from Latin America*, 138–173.

Herzberg-Druker, E., Kristal, T., Yaish, M. (2020). Work and Families in Times of Crisis: The case of Israel in the Coronavirus Outbreak. *SocArXiv Papers*.

doi:<https://doi.org/10.31235/osf.io/fxs64>

Higa, M., Ospino, C., Aragon, F. (2022). The persistent effects of COVID-19 on labour outcomes: evidence from Peru. *Applied Economics Letters*, 1–12.

doi:<https://doi.org/10.1080/13504851.2022.2036319>

Hipp, L., & Bünning, M. (2021). Parenthood as a driver of increased gender inequality during covid-19? exploratory evidence from germany. *European Societies*, 23(sup1), S658–S673.

doi:<https://doi.org/10.1080/14616696.2020.1833229>

Hochschild, A., & Machung, A. (2012). *The second shift: Working families and the revolution at home*. Penguin.

Hupkau, C., & Petrongolo, B. (2020). Work, care and gender during the Covid-19 crisis. *Fiscal studies*, 41(3), 623–651.

doi:<https://doi.org/10.1111/1475-5890.12245>

INEI (2010). *Encuesta Nacional de Uso del Tiempo*. Retrieved from <http://inei.inei.gob.pe/microdatos/>

INEI (2016). *Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza (ENAHO)*. Retrieved from <http://inei.inei.gob.pe/microdatos/>

INEI (2018a). *Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza (ENAHO)*. Retrieved from <http://inei.inei.gob.pe/microdatos/>

INEI (2018b). *Perú: Principales resultados de la Encuesta Nacional de Empresas (ENE), 2015*. Retrieved from <http://inei.inei.gob.pe/microdatos/>

INEI (2020a). *Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza (ENAHO)*. Retrieved from <http://inei.inei.gob.pe/microdatos/>

INEI (2020b). *Una mirada a la autonomía de las mujeres*. Author.

INEI (2021). *Perú: Encuesta demográfica y de Salud Familiar-ENDES*. Author.

Kalenkoski, C.M., & Pabilonia, S.W. (2020). *Initial impact of the Covid-19 pandemic on the Employment and Hours of Self-Employed Coupled and Single Workers by Gender and Parental Status* (Discussion paper No. 13443). Bonn: Institute of Labor Economics (IZA).

Koebel, K., & Pohler, D. (2020). *Labor markets in crisis: The causal impact of Canada's COVID-19 economic shutdown on hours worked for workers across the earnings distribution* (Tech. Rep.). Waterloo: University of Waterloo, Canadian Labour Economics Forum (CLEF).

Litwin, A., Perova, E., Reynolds, S.A. (2019). A conditional cash transfer and women's empowerment: Does Bolsa Familia influence intimate partner violence? *Social Science & Medicine*, 238, 112462.

doi:<https://doi.org/10.1016/j.socscimed.2019.112462>

Mincer, J. (1974). Schooling, experience, and earnings. *Human Behavior & Social Institution*.

Ministry of Education of Peru (2016). *Estadísticas de calidad educativa*.

Ministry of Education of Peru (2019). *Evaluación de logros de aprendizaje: Resultados 2019*.

Morduchowicz, A., & García, V. (2021). *El impacto de la pandemia COVID-19: sus consecuencias educativas y laborales en el largo plazo* (Technical Note No. IDB-TN-02225). Washington, DC: IDB.

Morrison, A. (2021). La participación laboral de las mujeres en el Perú: 10 mensajes clave y 6 recomendaciones de política. *Lima: Fondo Banco Interamericano de Desarrollo*. Retrieved from <https://publications.iadb.org/es/la-participacion-laboral-de-las-mujeres-en-el-peru-10-mensajes-clave-y-6-recomendaciones-de>

Muller, M., & Casabonne, U. (2020). *Closing gender gaps in Latin America and the Caribbean* (Working paper No. 128525). Washington, DC: World Bank.

Muller, M., & Paz, C. (2018). *Gender gaps in Perú: An overview* (Tech. Rep.). World Bank. Retrieved from <http://hdl.handle.net/10986/31820>

Niedzwiedz, C., et al. (2021). Mental health and health behaviours before and during the initial phase of the covid-19 lockdown: longitudinal analyses of the uk household longitudinal study. *Journal Epidemiology Community Health*, 75(3), 224–231.

doi:<https://doi.org/10.1136/jech-2020-215060>

Olivieri, S., Lara, G., Cuesta Leiva, J.A. (2021). *Covid-19 High Frequency Phone Surveys 2020*. Retrieved from <https://microdata.worldbank.org/index.php/catalog/4057>

PAHO (2021). *Whose time to care: Unpaid care and domestic work during COVID-19*. Retrieved from <https://data.unwomen.org/publications/whose-time-care-unpaid-care-and-domestic-work-during-covid-19>

Paredes, T. (2022). *COVID-19 y el mercado laboral de Lima Metropolitana y Callao: Un análisis de género* (Master's Thesis, Pontificia Universidad Católica del Perú). Retrieved from <https://tesis.pucp.edu.pe/repositorio/handle/20.500.12404/22659>

Porter, C., et al. (2021). The impact of covid-19 lockdowns on physical domestic violence: Evidence from a list randomization experiment. *SSM-Population Health*, *14*(100792).

doi:<https://doi.org/10.1016/j.ssmph.2021.100792>

Qian, Y., & Fuller, S. (2020). COVID-19 and the gender employment gap among parents of young children. *Canadian Public Policy*, *46*(S2), S89–S101.

doi:<https://doi.org/10.3138/cpp.2020-077>

Raz-Yurovich, L., & Marx, I. (2019). Outsourcing housework and highly skilled women's labour force participation—an analysis of a policy intervention. *European Sociological Review*, *35*(2), 205–224.

doi:<https://doi.org/10.1093/esr/jcz001>

Reichelt, M., Makovi, K., Sargsyan, A. (2021). The impact of covid-19 on gender inequality in the labor market and gender-role attitudes. *European Societies*, *23*(sup1), S228–S245.

doi:<https://doi.org/10.1080/14616696.2020.1823010>

Salas, V. (2021). El COVID y sus efectos en la igualdad de género en el mercado laboral peruano: un análisis en base a las encuestas nacionales de hogares del 2015 al 2021. *Revista Economía, Sociedad y Estadística*(11), 5–20. Retrieved from <https://www.inei.gob.pe/media/difusion/cide3/index.html#p=5>

Scheerens, J. (2016). Theories on educational effectiveness and ineffectiveness. *Educational effectiveness and ineffectiveness* (pp. 259–289). Springer. doi:[https://doi.org/10.1007/978-94-017-7459-8\\_11](https://doi.org/10.1007/978-94-017-7459-8_11)

SEDLAC (2020). *Estadísticas de Empleo*. Retrieved from SEDLAC-Universidad Nacional de la Plata

Sevilla, A., & Smith, S. (2020). Baby steps: The gender division of child-care during the covid-19 pandemic. *Oxford Review of Economic Policy*, *36*(Supplement 1), S169–S186.

doi:<https://doi.org/10.1093/oxrep/graa027>

Sviatschi, M.M., & Trako, I. (2021). *Gender Violence, Enforcement, and Human Capital* (Working paper No. 9624). Washington, DC: World Bank.

Tavora, I., & Rubery, J. (2013). Female employment, labour market institutions and gender culture in portugal. *European Journal of Industrial Relations*, 19(3), 221–237.

doi:<https://doi.org/10.1177/0959680113493374>

UN-Women (2020a). *Spotlight on gender, covid-19 and the sdgs: Will the pandemic derail hard-won progress on gender equality?* (G. Azcona, A. Bhatt, S.E. Davies, S. Harman, J. Smith, & C. Wenham, Eds.). New York, NY: UN Women.

UN-Women (2020b). Whose time to care? unpaid care and domestic work during covid-19. *Gender and Covid*, 25, 1–10. Retrieved from [https://bettercarenetwork.org/sites/default/files/2021-07/Whose-time-to-care-brief\\_0.pdf](https://bettercarenetwork.org/sites/default/files/2021-07/Whose-time-to-care-brief_0.pdf)

Vaccaro, G., et al. (2022). The gender wage gap in peru: Drivers, evolution, and heterogeneities. *Social Inclusion*, 10(1), 19-34.

doi:<https://doi.org/10.17645/si.v10i1.4757>

WHO (2005). *Estudio multipaís de la OMS sobre salud de la mujer y violencia doméstica: Primeros resultados sobre prevalencia, eventos relativos a la salud y respuestas de las mujeres a dicha violencia*. ISBN 924359351X. Ginebra, Suiza. Retrieved from <https://apps.who.int/iris/handle/10665/43390>

World Bank (2020). *Learning for All: Investing in People's Knowledge and Skills to promote development*. Retrieved from <https://openknowledge.worldbank.org/>

World Bank (2021). *Perú, panorama general*. World Bank.

## 8 Annexes

**Table 9: Impact of COVID-19 over worked hours (with phases of economic opening and iterative variable)**

Variables	(1) Total	(2) Formal	(3) Informal
COVID19	-3.336*** (0.743)	1.838 (1.456)	-5.918*** (0.859)
T	19.107*** (0.276)	25.203*** (0.498)	16.386*** (0.324)
COVID19*T	5.335*** (0.396)	4.318*** (0.777)	6.063*** (0.450)
COVID19*T*female	-4.238*** (0.466)	-7.029*** (0.876)	-3.577*** (0.541)
female	-2.974*** (0.374)	-3.701*** (0.673)	-2.752*** (0.454)
female*COVID19	3.382*** (0.671)	5.563*** (1.252)	2.491*** (0.797)
female*child*COVID19	0.291 (0.607)	0.356 (1.081)	0.710 (0.733)
female*remotability*COVID	1.577 (1.182)	-0.733 (1.571)	3.069 (1.880)
Phase 1 (05/2020)	-1.380** (0.670)	-4.851*** (1.370)	-0.207 (0.747)
Phase 2 (06/2020)	0.452 (0.689)	-3.608** (1.502)	1.917** (0.754)
Phase 3 (07/2020-09/2020)	0.551 (0.731)	-1.165 (1.593)	1.467* (0.797)
Phase 4 (10/2020-11/2020)	1.524 (0.939)	1.265 (2.152)	1.520 (0.997)
Phase 4 (extended) (12/2020)	0.882 (0.822)	-1.752 (1.596)	1.684* (0.945)
Phase 1*female	0.537 (0.794)	1.303 (1.537)	0.340 (0.915)
Phase 2*female	-0.814 (0.840)	0.943 (1.692)	-1.461 (0.965)
Phase 3*female	0.200 (0.657)	1.144 (1.241)	-0.436 (0.766)
Phase 4*female	0.358 (1.193)	1.041 (2.559)	-0.533 (1.306)
Phase 4 (extended)*female	-0.719 (0.691)	-1.511 (1.206)	-0.476 (0.840)
Constant	21.003*** (3.086)	19.357*** (4.574)	17.172*** (3.533)
Occupational Dummies	YES	YES	YES
Regional dummies	YES	YES	YES
Time dummies	YES	YES	YES
Observations	34,860	10,888	23,972
R-squared	0.334	0.407	0.319

Note: The estimate was made using the difference-in-differences method and includes control variables such as Household head, Race, Children under 6, Years of schooling and remote work. Additionally, the estimation included the categorical variables as fixed effect like Occupation, region and month-year information. Finally, the phases of economy recovery that have been used are determined about the month and the year when the questionnaire has been taken. The pooled standard errors at the individual level are in parentheses and the level of significance corresponds to the following classification: \*  $p < 0.1$ , \*\*  $p < 0.5$ , \*\*\*  $p < 0.01$  (\*) T is defined as  $P(\text{worked real hours vs. usual hours})$ , following Koebel & Pohler (2020).

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Departamento de Economía - Pontificia Universidad Católica del Perú  
Av. Universitaria 1801, San Miguel, 15008 – Perú  
Telf. 626-2000 anexos 4950 - 4951  
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